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RECORD OF ORAL HEARING
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

JEONG-JIN KIM, IL-RYONG PARK,
and HAE-JOO CHOI

Appeal 2008- 1194
Application 09/727,516
Technology Center 1700

Oral Hearing Held: Wednesday, April 9, 2008

Before THOMAS A. WALTZ, ROMULO H. DELMENDO, and
MICHAEL P. COLAIANNI, Administrative Patent Judges

ON BEHALF OF THE APPELLANT:

GREG CHENG-KANG HSU, ESQ.
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1 The above-entitled matter came on for hearing on Wednesday,
2 April 9, 2008, commencing at 1:36 p.m., at the U.S. Patent and Trademark
3 Office, 600 Dulany Street, 9th Floor, Hearing Room A, Alexandria,
4 Virginia, before Kevin E. Carr.

5 THE USHER: Calendar Number 20, Appeal Number 2008-
6 1194; and the attorney is Mr. Cheng-Kang Hsu.

7 JUDGE WALTZ: Thank you.

8 Good afternoon.

9 MR. HSU: Good afternoon.

10 JUDGE WALTZ: Mr. Hsu, you have 20 minutes to present
11 your arguments.

12 MR. HSU: Okay.

13 This is a case regarding application number 09/727516, Appeal
14 Number 2008-1194. And it is a rejection. There is only one rejection in this
15 appeal, and claims 4 through 20 is being rejected under 103A, based on the
16 related art in the spec and also in the reference, Yates. And there is only two
17 independent claims, claim 1 and claim 13. I just want to briefly introduce
18 the invention and related art, because this rejection is also based on the
19 related art.

20 And, first of all, the related art mentions this etching process.
21 Okay. The first steps to introduce the etching solution into the chamber then
22 the DI water, the ionized water is going to be introduced from the bottom of
23 the chamber to push the etching solution out. And that created some
24 problem, because water introduced into the etching chamber, the density of
25 the etching solution might be different, because at the bottom, the etching

1 solution still have a high density bottom, because the DI water introducing to
2 the chamber to dilute the etching solution. So, the result would be non-
3 uniform etching result.

4 So this invention doesn't use the DI water to push the etching
5 solution out. Instead, it used pressurized gas, introducing to the chamber to
6 push the etching solution out from the bottom of the H terminal. So this
7 generates an advantage because there is non-uniform etching process.

8 Okay?

9 JUDGE DELMENDO: So this was a known problem, this non-
10 uniform density?

11 MR. HSU: I think the problem is discovered by the applicant.
12 I don't know if it is a known problem or not.

13 JUDGE DELMENDO: Well, it was in the prior art section you
14 are saying, this disclosure?

15 MR. HSU: Yes, it is disclosed in the related art.

16 JUDGE DEMENDO: What do you mean by related art?

17 MR. HSU: Related art means that we don't acknowledge that
18 it's prior art.

19 JUDGE DELMENDO: It could be. It could be in the art.

20 MR. HSU: It could be, yes, but we don't know.

21 JUDGE WALTZ: But you don't dispute the admitted prior art
22 of the examiner uses that shows every step in claim 4 on appeal, except the
23 pressurized gas introduction?

24 MR. HSU: No. We don't dispute that. That's correct.

1 Okay, and I agree there is no teaching introduced pressurized
2 gas in the chamber in the related art. However, the examiner cites the '322
3 reference to cure the deficiency of the related art. Our argument is yes, it
4 doesn't teach anything about using the gas to push the etching solution out.
5 Actually, yes, it doesn't even say anything about how to drain the etching
6 solution at all. So our argument is that there is no teaching of that. The
7 examiner also mentioned that claim 23 of the reference mentioned that there
8 is a teaching that puts the gas into the chamber; however, it doesn't really
9 teach anything about use the gas to force or drain the etching solution out.

10 As you may read the reference, in view of column 5, line 4
11 through 8, the purpose of introducing the gas is to avoid the unnecessary
12 oxidation or contamination of the wafer. So it is also those problems would
13 occur during or after rinsing. And let me also introduce some idea about
14 how the etching process is going. First of all, you introduce an etching
15 solution; then you drain the etching solution out. And after that, you
16 introduce the DI water to do the rinsing process. Then you drain the DI
17 water out. So there are etching process, then rinsing process.

18 So the gas, basically, is for during or after the rinsing process.
19 There is nothing to do with the etching process. Okay. So the reference
20 only teaches that the gas is introduced during or after the rinsing process,
21 and also there is nothing shown in the reference showing that the gas is used
22 to, although it is pertinent to the gas, but it does show that it uses the gas to
23 force the etching out, drain the etching solution. So that's our main
24 argument.

Also, we can see in the reference in column 5, lines 30 through 33, also column 5, lines 61 through 65, it says that following the mechanical treatment step, which is etching process, the rinsing step is carried out by performing the DI water rinse in a treatment vessel. Then the treatment vessel is fired with inert gas, so the gas is introduced after the etching process has been done. And, also, the DI water has been introduced into the vessel. So because when you have a DI water in the chamber and if there is no inert gas, the oxygen would contact the wafer, which would create oxidization, also some contamination. This was introduced in the gas into the chamber to avoid the problem. So, basically, that's the main argument of it.

So the examiner argument that it is expected the etching solution would be drained in the same manner as the cleaner solution, which is the DI water, however, yes, may simply use the DI waters overflow the etching solution out, instead of use the same manner as the DI water to drain out. As you can see in figure 5, figure 6 of the reference, the gas enters into this and this is the DI water step of etching solution. So this is focused on the rinsing process instead of etching process.

So the gas will enter into it, but there is an exit on the right side, so the gas actually, there is a pressure on the gas. The gas will probably go to the right exit instead of push the etching solution out. So this is no pushing. And also, as you can see, this is like overflow rinser. So the DI water will come in from the bottom, then an overflow will go to the right exit. So when you have the etching solution, assuming there's an etching solution inside, the water would overflow and to push the etching solution

1 out from the right exit. It's more like the related art in the spec we disclosed.
2 So no teaching of using the inert gas to drain the etching solution out.

3 And also I want to argue that the combination of the related art,
4 yes, will still fail to teach draining the cleaning solution from the vessel from
5 above the objects, because the examiner argued that the water and the
6 etching solution would drain in the same manner from the bottom, as you
7 can see, like in figure 5 or figure 6. But when you drain the etching solution
8 out by using the gas, like in the related art, then there is no purpose to use
9 the DI water to drain the etching solution out. The only teaching in the
10 related art to show there is the step of draining the water from above the
11 object is when the DI water is introduced into the chamber to push the
12 etching solution out.

13 However, if you replace this step, yes, then there is no need for
14 the related art to use the DI water to push the etching solution out.
15 Therefore, there is no DI water to be drained out from the top. So, even if
16 there is teaching, yes, which I don't agree and to show that there is a gas to
17 push or drain the etching solution out, I still believe that the combination
18 still failed to teach the step of draining the water from below the object.

19 And basically that's my argument.

20 JUDGE WALTZ: Do you have any questions, Judge
21 Delmendo?

22 JUDGE DELMENDO: No.

23 JUDGE WALTZ: Do you have any, Judge Colaianni?

24 JUDGE COLAIANNI: No questions.

1 JUDGE WALTZ: I guess we have no further questions at this
2 time. Thank you for your time.

3 MR. HSU: Thank you.

4 Whereupon, at 1:50 p.m., the proceedings were concluded.